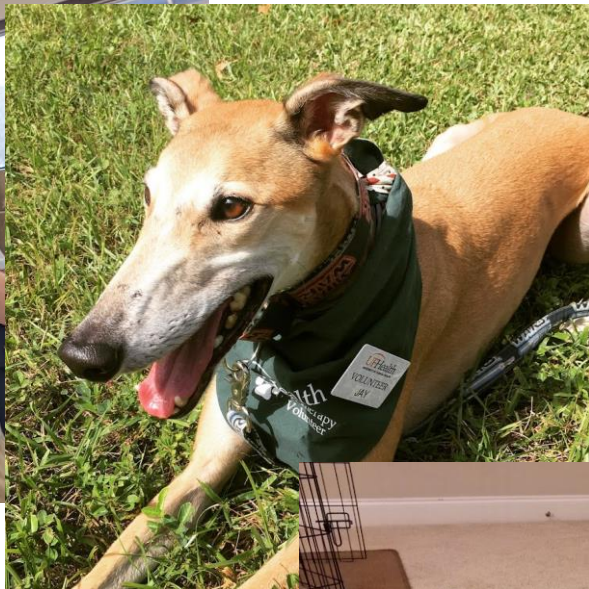


# **Basic Cytology for the General Practitioner**

**Cells, slides, and slams!**



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# Agenda

- Microscope Anatomy
- Diff-Quik
- Methylene Blue technique
- Stool floats and directs
- Ear cytology
- Skin scrape
- Skin tape prep
- Skin impression smear
- Heartworm direct
- FNA of Mass
- Organizing skin masses
- Blood Smear technique (dun  
dun dun!)
- How to read a blood smear
- Questions

# Anatomy of a Microscope



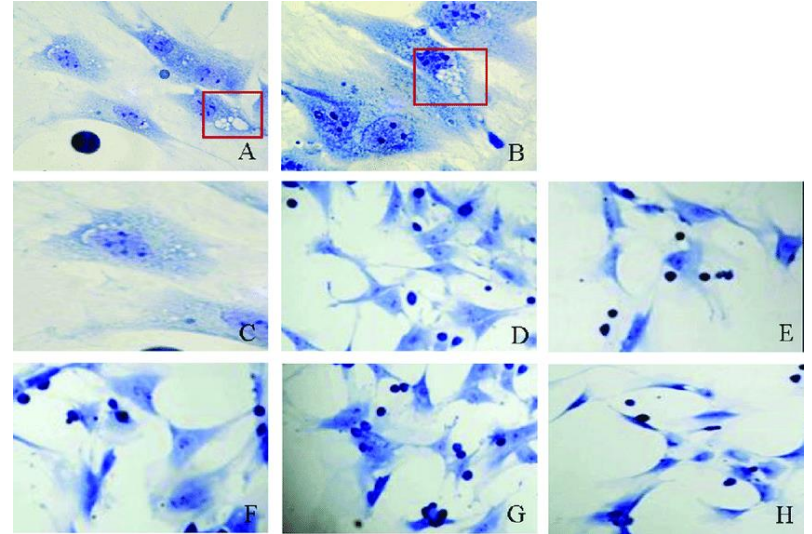
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# Diff-Quik stain



# Methylene Blue Technique

- Obtain slide
- Place one drop of Methylene blue on sample
- Place cover slop over sample
- Looking for adipocytes and mast cells
- Fast technique



# Magnification

- 4X
- 10X
- 40X
- 100X

Remember: HIGH AND DRY

# Patient presents for CE, D+, or V+

- Fresh or old sample works!
- Float
  - Break up sample in test tube with fecasol and fill to the top creating a meniscus
  - Place coverslip on meniscus
  - “Float” for 10 minutes
  - Place coverslip on slide
  - Read at 10x magnification
  
- Why do we call it a float?
- What does fecasol do?



# Name that worm!



Hookworms

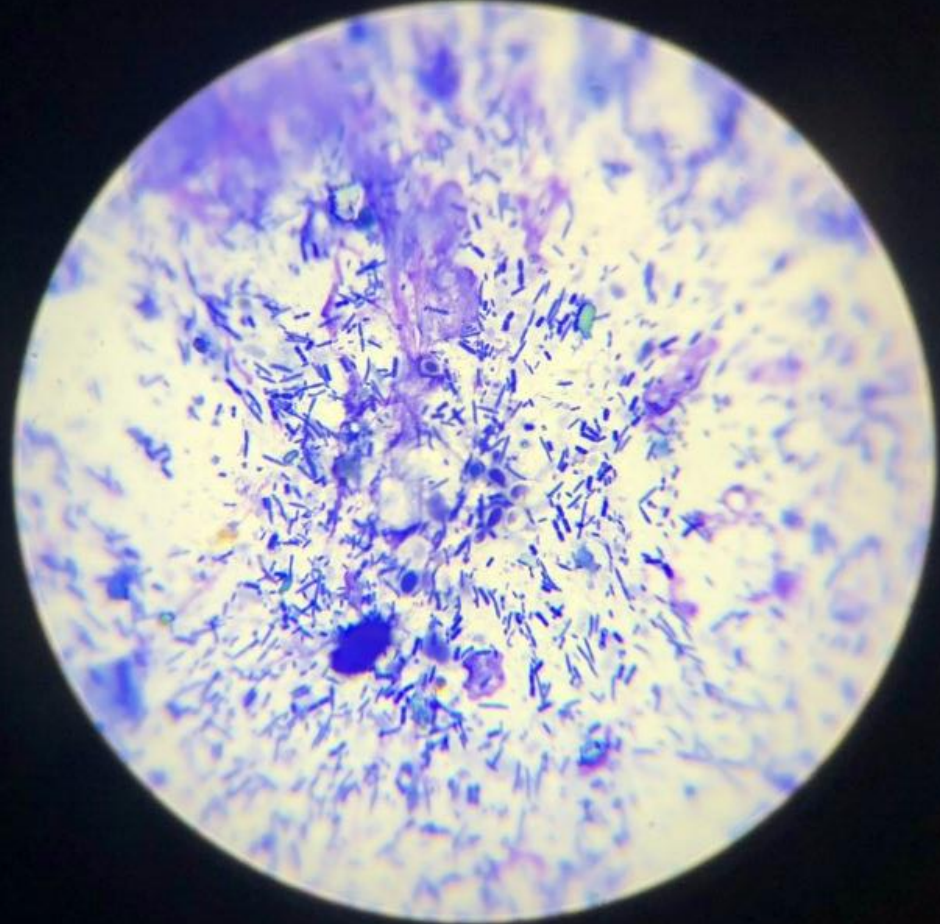
Roundworms

Whipworms

tapeworms

# Patient presents for CE, D+, or V+

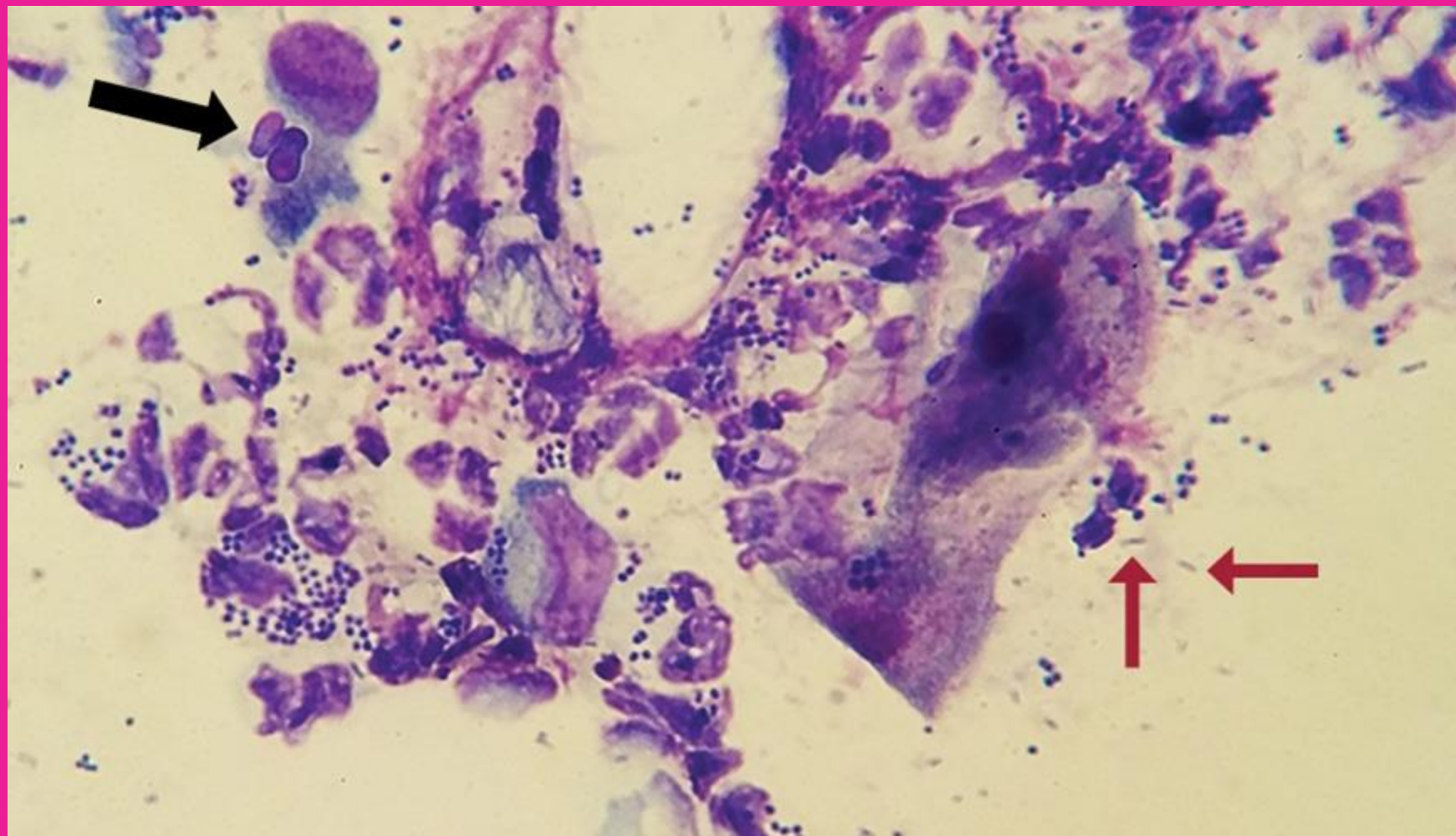
- Direct Fecal
  - roll/shmeer sample in thin layer
  - Heat fix with lighter
  - Dip in each stain for 8 seconds
    - Light blue, pink, purple
  - Lightly rinse with water
  - Sandwich between Bibulous paper
  - Evaluate under 100x



# Possible Ear infection

## Ear Cytology

- Obtain sample from ear canal with Q-tip
- Label left and right samples
- Roll samples onto your slide
- Heat fix with lighter
  - Don't roast
- Stain with diff quick stain
- Rinse lightly with water
- Sandwich between bibulous paper
- Evaluate under 100x



# Possible ear infection - with dark crusty waxy discharge

- Obtain two samples with Q-tips one from each ear
- Roll debris on slide
- Add 1 drop of mineral oil
- Cover with a cover slip
- Examine with 10x



# Ear Mites



# Skin Infections

## Skin Scrape

- Use a clean dull blade to scrape the skin until it bleeds
- Sample rolled onto slide in mineral oil
- Cover slip placed over sample
- Observed at 10x
- Antibiotic ointment applied to scraped area





Mange  
(itchy)



Demodex



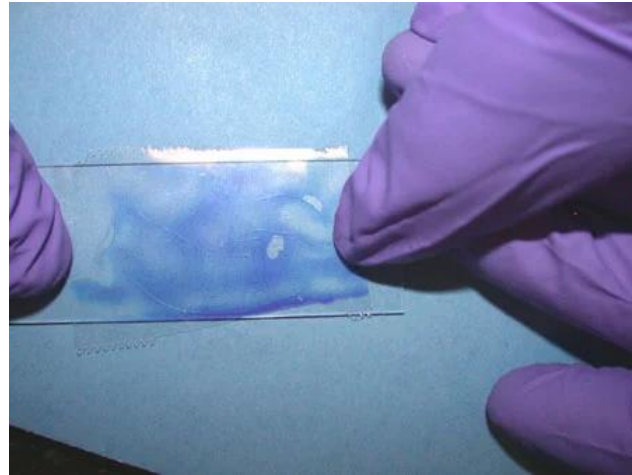
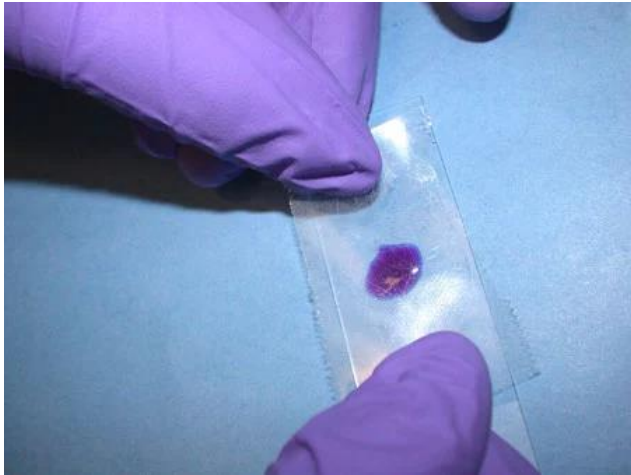
# Skin Impression Smear

- Crusty, purulent, oozy lesions
- Place slide on lesion
  - Gentle pressure roll and rotate over the lesion
- Dip through diff-quick stains
- Rinse lightly under a drip of the sink
- Allow to dry for doctor to read



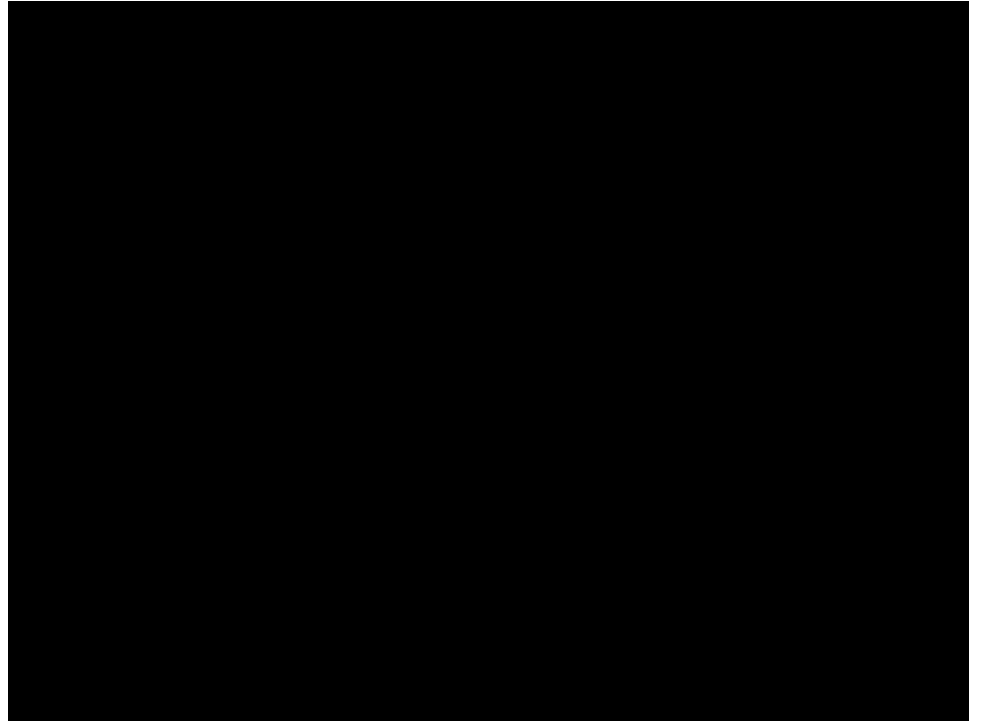
# Skin Tape Prep

- Scotch tape (not frosted) is pressed to lesion firmly and multiple times
- Place tape on slide over 1 drop of blue diff-quick stain



# Heartworm direct

- Place one drop of blood on a slide
- Place cover slip over sample
- Examine at 10x



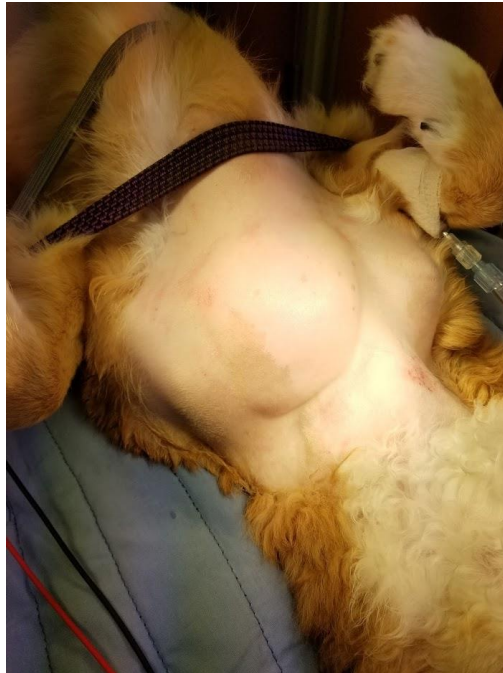
# FNA of Masses

- Prepare for FNA by lining up slides and 3ml syringes
- Aspirate mass
  - Redirect syringe
  - Created negative pressure
- Label slides with pencils
- Do not heat fix any FNA of masses, LN, organs...
- Stain in the “blood only” diff quik
- Rinse LIGHTLY with drops of water
- Let dry



# Skin Mass

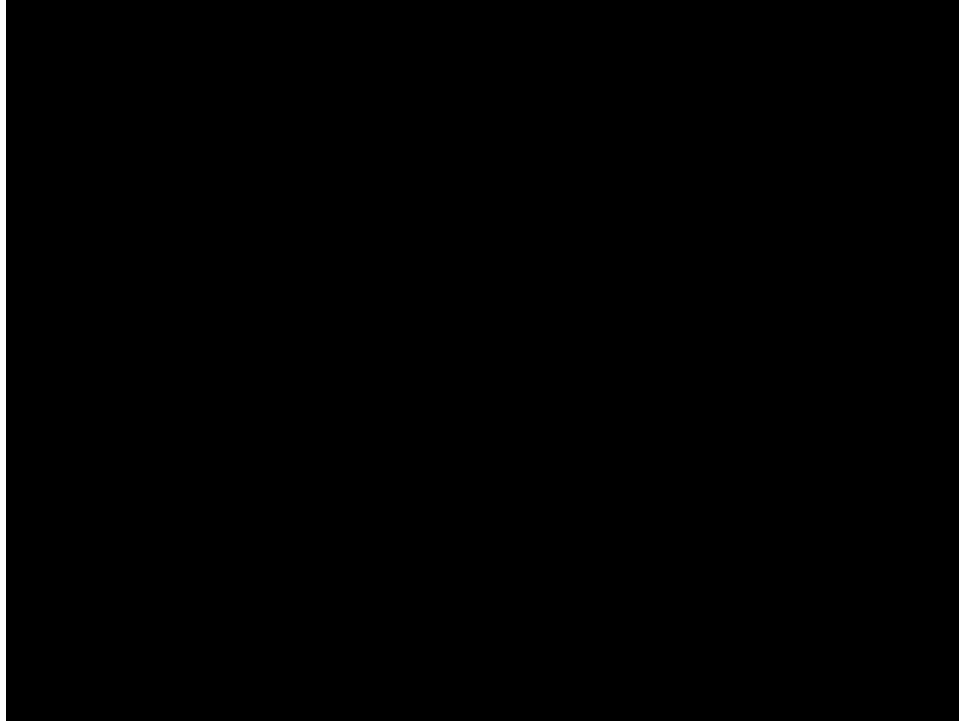
- Cyst
- Neoplasia
  - Epithelia
  - mesenchymal
  - Round
  - other
- Inflammatory
  - Suppurative
  - Macrophagic
  - Mixed
  - Eosinophilic



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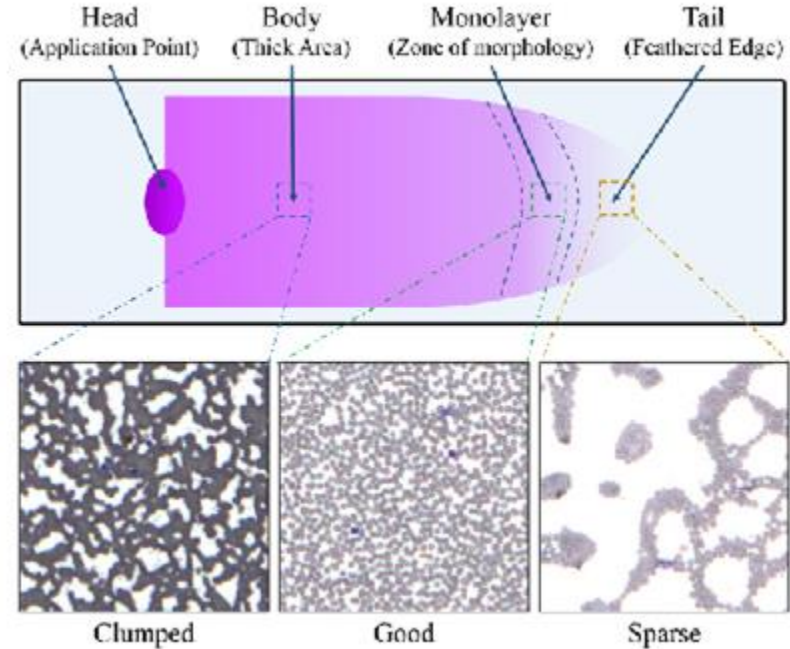
[eclinpath.com](http://eclinpath.com)

# How to make a blood smear



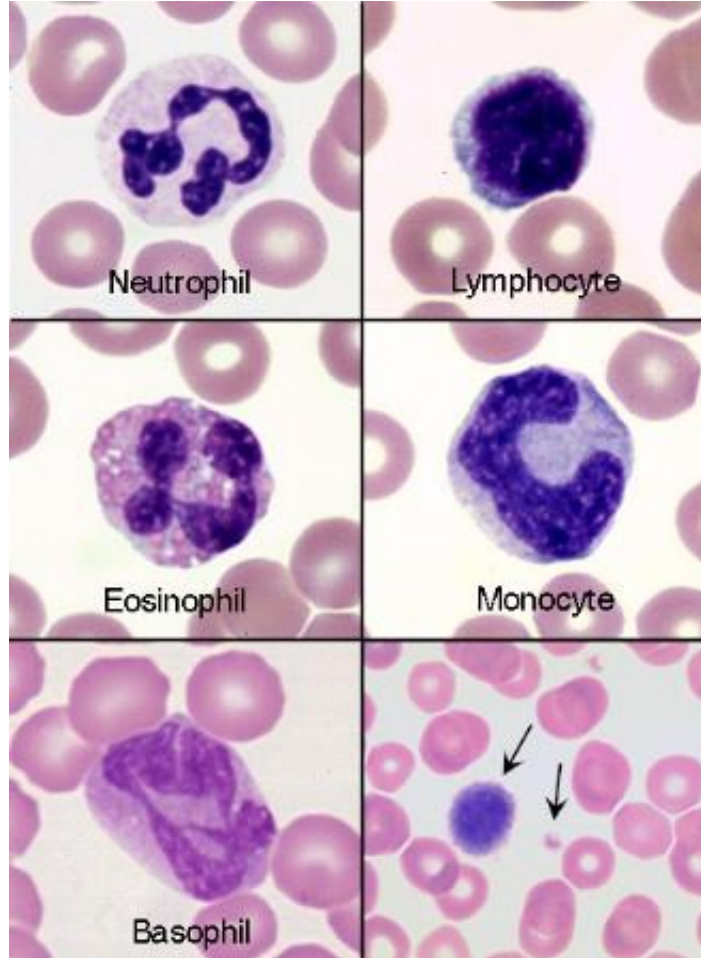
# How to read a blood smear

- Body - too thick to read
- Monolayer - RBC, WBC, Diff count
- Feathered edge - platelet clumps, microfilaria, mast cells, neoplastic cells

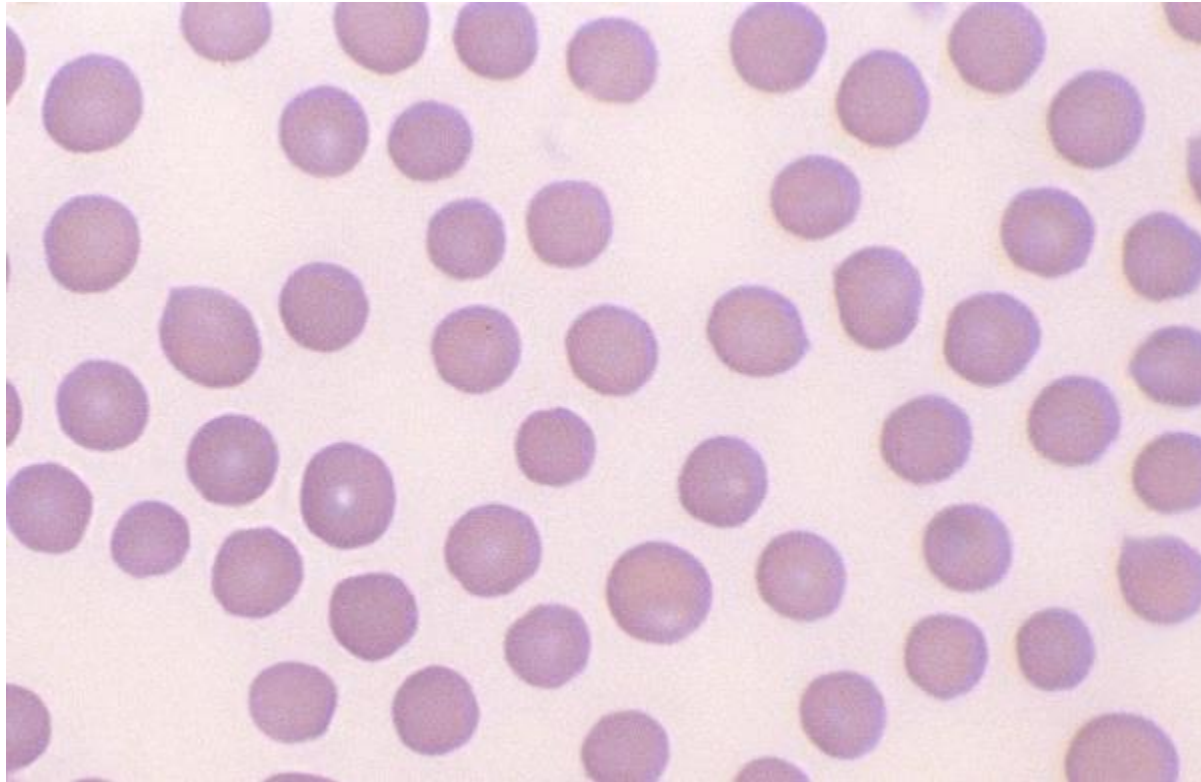




# Normal White Blood Cells



# Normal RBCs



# References

- <https://www.semanticscholar.org/paper/Automatic-zone-identification-in-blood-smear-images-Jahanifar-Hasani/b852727641b349cd2d2488ccf8329boee2d3bf7d/figure/0>
- <https://www.klimud.org/public/atlas/idrar/web/www.diaglab.vet.cornell.edu/clinpath/modules/heme1/canine.htm>
- <https://vetclinpathimages.com/tag/red-blood-cells/page/2/>

Questions?

